

Attorney's Docket No. 2705R-05

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of: Charles P. Bryant et al.

For: DISPERSANT-VISCOSITY IMPROVERS FOR LUBRICATING OIL COMPOSITIONS

the specification of which is attached hereto.

Commissioner for Patents  
Washington, D.C. 20231

**AMENDMENT ACCOMPANYING NEW APPLICATION TRANSMITTAL**

Prior to examining the accompanying new patent application, please amend the application as follows:

**IN THE CLAIMS:**

Please add the following new claims 46-64:

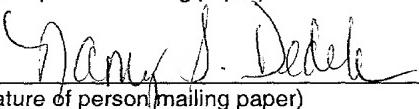
46. An additive concentrate comprising a nitrogen-containing copolymer comprising units derived from
- (A) from about 5% to about 75% by weight of alkyl acrylate ester monomers containing from 1 to 11 carbon atoms in the alkyl group;
  - (B) from about 25% to about 95% by weight of alkyl acrylate ester monomers containing from 12 to about 24 carbon atoms in the alkyl group; and
  - (C) from about 0.1% to about 20% by weight of at least one nitrogen containing monomer selected from the group consisting of vinyl substituted nitrogen heterocyclic monomers, N,N-dialkylaminoalkyl acrylate monomers, N,N-dialkylaminoalkyl acrylamide monomers and tertiary-alkyl acrylamides, provided that the total equals 100%.

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**CERTIFICATION UNDER 37 CFR 1.10**

I hereby certify that this paper is being deposited with the United States Postal Service on August 7, 2001 "Express Mail Post Office to Addressee" Mailing Label Number ET019019068US in an envelope addressed to: Box Patent Application, Assistant Commissioner for Patents, Washington, DC 20231.

Nancy S. Dedek  
(Name of person mailing paper)

  
(Signature of person mailing paper)

47. The additive concentrate of claim 46 wherein the copolymer comprises units derived from about 3% to about 60% by weight of monomer (A), from about 50% to about 70% by weight of monomer (B) and from about 0.5% to about 5% by weight of monomer (C).
48. The additive concentrate to claim 46 wherein monomer (A) comprises at least 5% by weight of alkyl acrylate esters having from 4 to 11 carbon atoms in the alkyl group.
49. The additive concentrate of claim 46 wherein monomer (A) comprises from about 10% to about 40% by weight of alkyl acrylate esters having from 1 to 4 carbon atoms in the alkyl group.
50. The additive concentrate of claim 46 wherein monomer (A) comprises from about 60% to about 90% by weight of alkyl acrylate esters having from 9 to 11 carbon atoms in the alkyl group.
51. The additive concentrate of claim 46 wherein the nitrogen containing monomer is an N-vinyl substituted heterocyclic monomer.
52. The additive concentrate of claim 51 wherein the N-vinyl substituted heterocyclic monomer is at least one member of the group consisting of N-vinyl imidazole, N-vinyl pyrrolidinone and N-vinyl caprolactam.
53. The additive concentrate of claim 46 wherein the vinyl substituted heterocyclic monomer is a vinyl pyridine.
54. The additive concentrate of claim 54 wherein the nitrogen containing monomer is a N,N-dialkylaminoalkyl acrylamide or acrylate wherein each alkyl or aminoalkyl group contains, independently, from 1 to about 8 carbon atoms.
55. The additive concentrate of claim 46 wherein the nitrogen containing monomer is tertiary butyl acrylamide.
56. The additive concentrate of claim 46 wherein (C) the nitrogen containing monomer is grafted onto an alkyl acrylate copolymer containing units derived from
- (A) from about 5% to about 75% by weight of alkyl acrylate ester monomers containing from 1 to 11 carbon atoms in the alkyl group and
  - (B) from about 25% to about 95% by weight of alkyl acrylate ester monomers containing from 12 to about 24 carbon atoms in the alkyl group.
57. The additive concentrate of claim 46 wherein (C) the nitrogen containing monomer is incorporated as a comonomer in an alkyl acrylate polymer.

58. The additive concentrate of claim 56 wherein monomer (A) comprises at least 5% by weight of alkyl acrylate esters containing from 4 to 11 carbon atoms in the alkyl group.
59. The additive concentrate of claim 46 wherein the copolymer has a number average molecular weight ranging from about 10,000 to about 300,000.
60. The additive concentrate of claim 59 wherein the number average molecular weight of the copolymer ranges from about 30,000 to about 100,000.
61. The additive concentrate of claim 59 wherein the copolymer has polydispersity values ranging from about 1.5 to about 5.
62. The additive concentrate of claim 46 wherein the alkyl acrylate ester monomers comprise alkyl methacrylate esters.
63. A lubricating oil composition comprising a major amount of an oil of lubricating viscosity and a minor amount of a nitrogen-containing copolymer comprising units derived from
- (A) from about 5% to about 75% by weight of alkyl acrylate ester monomers containing from 1 to 11 carbon atoms in the alkyl group;
  - (B) from about 25% to about 95% by weight of alkyl acrylate ester monomers containing from 12 to about 24 carbon atoms in the alkyl group; and
  - (C) from about 0.1% to about 20% by weight of at least one nitrogen containing monomer selected from the group consisting of vinyl substituted nitrogen heterocyclic monomers, N,N-dialkylaminoalkyl acrylate monomers, N,N-dialkylaminoalkyl acrylamide monomers and tertiary-alkyl acrylamides, provided that the total equals 100%.
64. The lubricating oil composition of claim 63 wherein the nitrogen containing monomer (C) is grafted onto a polyacrylate copolymer derived from monomers (A) and (B).

Claim 12, line 1 thereof, delete "claim 11" and insert in lieu thereof -- claim 46 --.

Claim 13, line 1 thereof, delete "claim 11" and insert in lieu thereof -- claim 46 --.

Claim 15, line 1 thereof, delete "claim 11" and insert in lieu thereof -- claim 46 --.

Claim 17, line 1 thereof, delete "claim 11" and insert in lieu thereof -- claim 46 --.

Claim 45, line 1 thereof, delete "claim 42" and insert in lieu thereof -- claim 63 --.

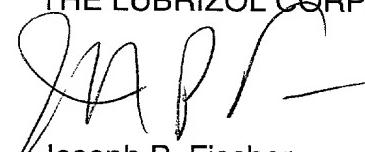
Please cancel claims 1-11 and 19-44.

REMARKS

The foregoing amendments are fully supported by the disclosure and claims of the parent and grandparent applications, as filed.

Respectfully submitted,

THE LUBRIZOL CORPORATION



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